

**Amendments to the Claims:**

**This listing of claims will replace all prior versions and listing of claims in the application.**

**Please cancel claims 3, 4, 5, 7 to 11, 13 to 24, and 29 to 41 without prejudice or disclaimer.**

**Please amend claims 1, 2, 12, 25, 27 and 28 as set forth below.**

**Please add claims 42 to 53 as set forth below.**

1. (currently amended) A radiation resistant *Deinococcus* bacterium comprising a nucleic acid encoding at least one *mer* operon capable of detoxifying at least one heavy metal when expressed ~~engineered to detoxify at least one the toxin, wherein said *Deinococcus* can grow in the presence of continuous ionizing radiation exposure.~~

2. (currently amended) A radiation resistant *Deinococcus* bacterium of claim 1, wherein ~~which survives acute exposure to ionizing radiation of up to about 15,000 Gy or said *Deinococcus* bacterium is non-pathogenic and~~ can grow in the presence of continuous ionizing radiation of up to about 60 Gy/hour.

3 to 5. (cancelled)

6. (currently amended) A radiation resistant bacterium of claim 4 1, wherein the at least one heavy metal is selected from the group consisting of chromium, lead, arsenic, zinc, cadmium, cobalt or mercury.

7 to 11. (cancelled)

12. (currently amended) A radiation resistant bacterium of claim 1, wherein the bacterium has been engineered to express at least one protein encoded by a nucleic acid other than the *mer* operon ~~a heterologous protein or enzyme selected from the group consisting of toluene dioxygenase, the proteins encoded by the *mer* operon, the proteins encoded by the *Pseudomonas* Tol region, the proteins encoded by the *xyiL-xyiE* operon, a monooxygenase, the proteins encoded by *bphA1A2A3A4*, the proteins encoded by *ezeA*, *B* and *C* genes, the *smtA* and *B* genes and the *arsA* and *B* genes.~~

13 to 24. (cancelled)

25. (currently amended) A bioremediation composition comprising the *Deinococcus* a bacterium of ~~any one of~~ claim 1.

26. (original) A bioremediation composition of claim 25 further containing an agent selected from the group consisting of a film forming agent and a nutrient agent.

27. (currently amended) A bioremediation composition of claim 25 which is ~~if~~ formulated for controlled release.

28. (currently amended) A bioremediation composition of claim 26 which is ~~if~~ formulated for controlled release.

29 to 41. (cancelled)

42. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein said *Deinococcus* is *Deinococcus radiodurans* (strain ATCC BAA-816).

43. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein the *mer* operon is constitutively expressed.

44. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein at least one *mer* operon is integrated into said *Deinococcus* bacterium genome.

45. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein said *Deinococcus* grows in the presence of up to 100  $\mu$ M mercury.

46. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein the nucleic acid encoding the *mer* operon is expressed from an autonomously replicating plasmid.

47. (new) The radiation resistant *Deinococcus* bacterium of claim 46 wherein said autonomously replicating plasmid is pMD66 or a derivative thereof.

48. (new) The radiation resistant *Deinococcus* bacterium of claim 1, wherein the nucleic acid encoding the *mer* operon is intergrated in a plasmid.

49. (new) The radiation resistant *Deinococcus* bacterium of claim 48, wherein the plasmid is pMD727 or a derivative thereof.

50. (new) The radiation resistant *Deinococcus* bacterium of claim 48, wherein the plasmid is pMD728 or a derivative thereof.

51. (new) The radiation resistant *Deinococcus* bacterium of claim 48, wherein the plasmid is pMD731 or a derivative thereof.

52. (new) A radiation resistant *Deinococcus radiodurans* bacterium comprising a nucleic acid encoding at least one *mer* operon capable of detoxifying at least one heavy metal when expressed, wherein said

*Deinococcus* can grow in the presence of continuous ionizing radiation exposure.

53. (new) A radiation resistant, non-pathogenic *Deinococcus radiodurans* bacterium comprising a nucleic acid encoding at least one *mer* operon capable of detoxifying at least one heavy metal when expressed, wherein said *Deinococcus* can grow in the presence of continuous ionizing radiation exposure.